GENERAL INDEX

A

Abscisic acid, Tillandsia 502
Acacia, leaf, phyllode 351
Acer, stem girdling, vessel differentiation 50
Achlys, forest ecology 508
Acid phosphatase, Pinus shoot initiation 312
Actinomycin D, Cattleya pollination 43
Adenosine triphosphatase, Pinus shoot initiation 312
Agrobacterium, moss gametophore induction 302
Alfalfa, *see* Medicago
Alligator weed, *see* Alternanthera
Allocasuarina, stem cutting 378
Allocation, dry matter, Alternanthera 105
Allozymes, Spartina 569
Aloni, Roni, Length, width, and pattern of regenerative vessels along strips of vascular tissue 50
Alternanthera, light and growth 105
Ambrosia: axis splitting, xylem pressure potentials, water movement 125; growth, precipitation 116
Amylase, Ustilago 483
Anatomy: Acacia leaf, phyllode 351; beet 465; Callistophyton phloem 395; Cyclanthaceae 535; Gleditsia calcium-excreting system 474; Helianthus leaf 346; Iridaceae rhizome 524; Medullosa phloem 550
Antheridiogen, Ceratopteris 37
Anther smut, Ustilago 140, 145
Anthocyanins, Cattleya 43
Anthoxanthum, vasculature, fertile floret 358
Antos, Joseph A., Ecological implications of belowground morphology of nine coniferous forest herbs 508
Apical dominance, Avena 293
Apical meristem, Brassica shoot 308
Aplectrum, seed germination 495
Apomixis, Paspalum 420
Arceuthobium, phloem 461
Arditti, Joseph: Postpollination phenomena in orchid flowers. XII. Effects of pollination, emasculation, and auxin treatment on flowers of Cattleya Porcia 'Cannizaro' and the rostellum of Phalaenopsis 43; Opening and resupination in buds and flowers of Dendrobium (Orchidaceae) hybrids 215; Effects of orchinol, loroglossol, dehydroorchinol, batatasin III, and 3,4′-dihydroxy-5-methoxydihydrostilbene on orchid seedlings 298; Seed germination of North American orchids. II. Native California and related species of Aplectrum, Cypripedium, and Spiranthes 495
Arnica, forest ecology 508
Arundo, synergids 78
Atriplex: seed polymorphism, germination, salinity stress 487; sex ratios 385
Austrobaileya, pollen wall development 11
Auxin: Acer vessel regeneration 50; Avena, apical dominance 293; Casuarina, stem cutting, rooting 378; Ceratopteris, gametophyte development 37; Dendrobium resupination 215; Helianthus, transport, growth 163; orchid pollination 43; protocorm formation 210
Auxin-gibberellin synergism, Cyclamen 170
Avena, apical dominance 293
Axis splitting, Ambrosia 125

B

Bacterium, *see* Agrobacterium
Bacteroids, Macroptilium, Parasponia 444
Bahiagrass, Paspalum 420
Barcikowski, Wayne, Water relations of cacti during desiccation: distribution of water in tissues 110
Bartholomew, Duane P., Acacia koa leaves and phyllodes: gas exchange, morphological, anatomical, and biochemical characteristics 351
Bayer, Randall J., Nuclear DNA contents of Coreopsis nuecensoides and C. nuecensis (Asteraceae), a progenitor-derivative species pair 240
Becvar, James E., Similarity and apparent convergence in the nectar-sugar composition of some hummingbird-pollinated flowers 132
Beet, anatomy 465
Begonia, histology, thin layer culture 55
Benzyladenine, Pinus cotyledon explants 312
Beringer, H., Dynamic and structural relationships among leaves, roots, and storage tissue in the sugar beet 465
Biomass, Ambrosia, Larrea 116
Borchert, Rolf: Control of development in the bifurcating branch system of Tabebuia rosea; a computer simulation 184; Functional anatomy of the calcium-excreting system of Gleditsia triacanthos L. 474
Bosabalidis, A. M., Ultrastructural differentiation of an unusual structure lining the anticlinal walls of the inner secretory cells in Tamarix salt glands 427
Branch system, Tabebuia 184
Brassica, enzyme activity, shoot apical meristem 308
Braun, D., The biological species of the genus Lens L. 253
Bromeliad, *see* Tillandsia
Bud: Avena, hormone transport 293; Dendrobium, resupination 215; formation, Begonia, tissue culture 55; moss, bacterial induction 302
Burrillia, teliospores 452
Burson, Byron L., Cytology of intra- and interspecific hybrids between two cytotypes of Paspalum notatum and P. cromyorrhizon 420
Burton, Glenn W., Cytology of intra- and interspecific hybrids between two cytotypes of Paspalum notatum and P. cromyorrhizon 420

C

Cactus, *see* Carnegiea, Ferocactus, Opuntia
Calcium excretion, Gleditsia 474
Calcium oxalate crystals, Gleditsia 474
Callistophyton, phloem 395
Callose, Arceuthobium 461
Calvin, Clyde L., Phloem in Arceuthobium globosum (Viscaceae) 461
CAM: Carnegiea, Ferocactus, Opuntia 110; Tillandsia 502
Cambium: Acer vessel regeneration 50; phloem, Pharbitis 196
Carboniferous: Callistophyton 395; Medullosa 550; Psaronius 407
Cardiocarpus 275
Carnegiea, water relations, desiccation 110
Cascade Mountains, forest herbs, ecology 508
Cassia, seed dispersal pattern 136
Casuarina, stem cutting, nodulation 378
Cattleya: phytoalexins, seedling growth 298; pollination, emasculation, auxins 43
Cell, division and elongation, Zea leaf 60
Cell wall: moss, gametophore formation 302; Tamarix salt glands, ultrastructure 427

Centromere linkage, Ustilago 140, 565
Ceratopteris, gametophyte development 37
Chasmogamy: Collomia 329; Viola 83
Chionochloa, synergids 78
Chlorophyll, Cattleya seedling 298
Chlyah, Averil, Histological changes in epidermal and subepidermal cell layers of Begonia rex induced to form de novo unicellular hairs, buds, and roots 55
Chromosomes; Coreopsis 240; Lens 253
Chromosome transfer, Ustilago 145
Cintractia, teliospores 452
Clarkia, seed germination 246
Cleistogamy: Collomia 329; Viola 83
Clintonia, forest ecology 508
Clustering method 518
Coal balls: Callistophyton 395: Medullosa 550
Colchicine, metaphase accumulation 22
Cold hardiness, Pinus 229
Collomia, chasmogamous, cleistogamous flowers 329
Competition, Ambrosia, Larrea 116
Computer simulation, Tabebuia branching 184
Cone, Pinus 262
Connor, H. E., Haustorial synergids in danthonioid grasses 78
Control of development, Tabebuia branching 184
Convergence, nectar-sugar, hummingbird-pollinated plants 132
Cordaianthus 275
Cordaixylon n.sp. 275
Coreopsis, nuclear DNA 240
Corms, forest herbs 508
Corn, *see* Zea
Corolla, Solanum, development 22
Cotyledon: date, growth 176; explant, Pinus, shoot initiation 312; Prosopis 340
Coughenour, M. B., Compensatory photosynthetic responses of three African graminoids to different fertilization, watering, and clipping regimes 151
Crassulacean acid metabolism, *see* CAM
Crawford, Daniel J., Nuclear DNA contents of Coreopsis nuecensoides and C. nuecensis (Asteraceae), a progenitor-derivative species pair 240
Crystals, Gleditsia 474
Culpepper, Guy, A morphometric study of anatomical changes during sunflower leaf development under low light 346
Culture, Rhynchostylis leaf 210
Cuticle: Medicago stigma 436; Prosopis, environmental conditions 26
Cycad, *see* Cycas, Dioon, Zamia
Cycas, aerodynamics, pollination 92
Cyclamen, GA_3, NAA, peduncle senescence 170
Cyclanthaceae, systematic anatomy 535
Cycloheximide, Cattleya pollination 43
Cypripedium, seed germination 495
Cytochrome oxidase, Brassica shoot apices 308
Cytogenetics, Lens 253
Cytokinin, apical dominance, Avena 293
Cytology, Paspalum hybrids 420

D

Danthonia,synergids 78
Date, *see* Phoenix
Day, Alan W., A survey of extracellular enzymes in the smut fungi 483
DeMason, Darleen A., Growth parameters in the cotyledon of date seedlings 176
Dendrobium, resupination 215
Dengler, Nancy G., Comparison of leaf development in normal (+/+), entire (e/e), and lanceolate (La/+) plants of tomato, Lycopersicon esculentum 'Ailsa Crag' 66
Desert shrub: growth, precipitation 116; *see* Ambrosia, Larrea
Desiccation, Carnegiea, Ferocactus, Opuntia 110
Development: Austrobaileya pollen wall 11; beet root 465; Cattleya 298; Ceratopteris gametophyte 37; Gleditsia leaf 474; Glycine embryo sac 1; Helianthus leaf 346; Isoetes root-producing meristem 372; Lobelia flower 323; Lycopersicon leaf 66; Medicago stigma 436; Pharbitis phloem 196; Psaronius 407; Solanum corolla 22; Tabebuia branch system 184; Tamarix salt glands 427; Viola flower 83; Zea leaf 60
Developmental stability, Lobelia flower 323
Devlin B., Factors that influence the duration of the staminate and pistillate phases of Lobelia cardinalis flowers 323
2,4-Dichlorophenoxyacetic acid (2,4-D), *see* Auxin
Dichogamy, Lobelia 323
Differentiation: Acer, vascular 50; Ceratopteris gametophyte 37; Zea leaf 60
Dioecious, Atriplex 385
Dioon, aerodynamics, pollination 92
Diploids, Clarkia 246
Dispersal, Cassia seed 136
DNA, Coreopsis 240
DNAase, Ustilago 483
Donly, B. Cameron, A survey of extracellular enzymes in the smut fungi 483
Dormancy, Spergularia 33
Downs, Robert J., Photoperiod effects on growth rate of in vitro cultured soybean embryos 157
Drought, Carnegiea, Ferocactus, Opuntia 110
Dubuc-Lebreux, Michèle-A., Quantitative distribution of mitotic activity during early corolla development of Solanum dulcamara L. 22
Dwarf mistletoe, *see* Arceuthobium

E

Eckard, K. J., The inflorescence as a metapopulation of flowers: position-dependent differences in function and form in the cleistogamous species Collomia grandiflora Dougl. ex Lindl. (Polemoniaceae) 329
Ecology: Clarkia 246; forest herbs 508; Indiana Dunes 222; Lens 253; Spartina 569
Egg apparatus, Glycine 1
Electrophoresis, Spartina 569
Ellstrand, N. C., The inflorescence as a metapopulation of flowers: position-dependent differences in function and form in the cleistogamous species Collomia grandiflora Dougl. ex Lindl. (Polemoniaceae) 329
Emasculation, Cattleya, Phalaenopsis 43
Embryo growth, in vitro, Glycine 157
Embryo nutrition, Glycine 334
Embryo sac, Glycine, ultrastructure 1
Endarch, Cordaixylon 275
Enzymes, smut fungi, Ustilago 483; *see* acid phosphatase, adenosine triphosphatase, amylase, cytochrome oxidase, DNAase, lipase, pectinesterase, peroxidase, protease, RNAase, succinate dehydrogenase
Eocene (Middle), Pinus 262
Epiphyte, *see* Tillandsia
Erythranthera, synergids 78
Erythronium, forest ecology 508
Ethylene: Dendrobium resupination 215; Phalaenopsis rostellum 43
Evolution: Arceuthobium phloem 461; Coreopsis 240; Lens 253
Explants, Begonia, thin layer culture 55
Extracellular enzymes, smut fungi, Ustilago 483

F

Fagerberg, Wayne R., A morphometric study of anatomical changes during sunflower leaf development under low light 346
Fern, *see* Ceratopteris, Psaronius
Ferocactus, water relations, desiccation 110
Fine structure, *see* Ultrastructure

Fixation threads, Macroptilium, Parasponia 444
Floral duration, Lobelia 323
Floral evocation, Brassica 308
Floral senescence, Cattleya, Phalaenopsis 43
Floret, Anthoxanthum, vasculature 358
Florinites 275
Flower: Collomia, chasmogamous, cleistogamous 329; Dendrobium, resupination 215; Solanum, development 22; Viola, development 83
Flowering: Atriplex 385; Cyclamen 170
Flower tripping, Medicago 436
Fluorescence microscopy, Prosopis seed 340
Folsom, Michael W., Ultrastructural aspects of the mature embryo sac of soybean, Glycine max (L.) Merr. 1
Fossil: conifer, Pinus 262; grass leaves 204
Freeman, C. Edward, Similarity and apparent convergence in the nectar-sugar composition of some hummingbird-pollinated flowers 132
Freeman, D. Carl, The relative influences of mortality, nonflowering, and sex change on the sex ratios of six Atriplex species 385
Fructose, hummingbird-pollinated plants 132
Fruit, Cassia, seed number and dispersal 136
Fungi (smut), enzyme survey 483

G

GA_3: Atriplex, salinity stress 487; Spergularia germination 33; NAA, Cyclamen peduncle senescence 170; protocorm formation 210
Gametophore, moss, bacterial induction 302
Gametophyte, Ceratopteris, development 37
Garber, E. D.: Genetics of Ustilago violacea: XVI. Morphological mutations 140; XVII. Chromosome transfer as a source of recombinant sporidia recovered from immature infected anthers 145; XVIII. Morphology mutations for single selection 565
Gas exchange: Acacia leaf, phyllode 351; Hyparrhenia, Kyllinga, Themeda 151; Tillandsia 502
Genetics: Coreopsis 240; Pinus 229; Spartina 569; Ustilago 140, 145, 565
Genomes, Paspalum 420
Geographic variation, Pinus 229
Germination: asymbiotic, orchid seed 495; Atriplex seed, salinity stress 487; Cattleya seed 298; Clarkia seed 246; Spergularia 33
Gibberellic acid, *see* GA_3
Gibberellin-auxin synergism, Cyclamen 170
Giles, Kenneth L., Some observations on the relationship between cell divison and cell determination in the epidermis of the developing leaf of corn (Zea mays) 60
Gleditsia, calcium-excreting system 474
Globoids, Prosopis 340
Glucose, hummingbird-pollinated plants 132
Glycine: embryo sac ultrastructure 1; photoperiod, growth 157; Wandlabrinthe 334
Goshen, D., The biological species of the genus Lens L. 253
Grass: danthonioid, haustorial synergids 78; Miocene, leaves 204; *see* Paspalum, Spartina, Themeda, Kyllinga, Hyparrhenia
Grazing, Serengeti Plains 151
Gresshoff, P. M., Structure of nodules formed by Rhizobium strain ANU289 in the nonlegume Parasponia and the legume siratro (Macroptilium atropurpureum) 444
Growth: Alternanthera 105; Ambrosia, Larrea 116; Casuarina, stem cutting 378; Cattleya seedling, leaf, phytoalexins 298; Cyclamen buds 170; date cotyledon 176; forest herbs 508; Glycine seed 157; Helianthus hypocotyl 163; Hyparrhenia, Kyllinga, Themeda 151; Psaronius 407; Zea leaf 60
Gymnosperm, Medullosa 550
Gymnostoma, stem cutting 378

H

Hair formation, Begonia 55
Halophyte, *see* Atriplex, Spergularia
Harrison, Marcia A., The role of hormone transport and metabolism in apical dominance in oats 293
Hasenstein, Karl-Heinz, Distribution and metabolism of IAA in relation to the growth of Helianthus hypocotyls 163
Haustorial synergids, danthonioid grasses 78
Hawksworth, Frank G., Phloem in Arceuthobium globosum (Viscaceae) 461
Helianthus: IAA, growth 163; morphometry, leaf development 346
Henderson, Norman R., A comparison of stand structure and fire history in two black oak woodlands in northwestern Indiana 222
Henry, Caroll E., A scanning electron microscope study of the surface structure of teliospores of ten species in the Ustilaginales 452
Hickok, Leslie G., Effects of auxins on gametophyte development and sexual differentiation in the fern Ceratopteris thalictroides (L.) Brongn. 37
Hills, Katherine A., Effects of orchinol, loroglossol, dehydroorchinol, batatasin III, and 3,4′-dihydroxy-5-methoxydihydrostilbene on orchid seedlings 298
Histochemistry: Brassica 308; Pinus shoot initiation 312; Prosopis seed 340
Histology: Begonia 55; Viola flower development 83
Hoff, R. J., Geographic patterns of genetic variation in Pinus monticola 229
Honda, Hisao, Control of development in the bifurcating branch system of Tabebuia rosea: a computer simulation 184
Honey locust, *see* Gleditsia
Honey mesquite, *see* Prosopis
Hormones, apical dominance, Avena 293
Hummingbird, pollination 132
Hybrid: Lens 253; Paspalum, cytology 420
Hyparrhenia, photosynthesis, growth 151

I

IAA, *see* Auxin
IBA, *see* Auxin
Indiana Dunes, black oak fire 222
Indole-3-acetic acid, *see* Auxin
Indole-3-butyric acid, *see* Auxin
Infection threads, Macroptilium, Parasponia 444
Inflorescence, Lobelia 323
Intercellular spaces, date 176
Interfacial apparatus, Tamarix 427
Intermediary cell, Anthoxanthum floret 358
Intraspecific variation, Ustilaginales 452
Ion absorption, Atriplex 487
Iridaceae, systematics 524
Irving, Delilah W., Seed structure and histochemistry of Prosopis velutina (Leguminosae) 340
Isoetes, root-producing meristem 372
Isozymes, Spartina 569

J

Jones, Cynthia S.: The comparative importance of overland runoff and mean annual rainfall to shrub communities of the Mojave Desert 116; The effect of axis splitting on xylem pressure potentials and water movement in the desert shrub Ambrosia dumosa (Gray) Payne (Asteraceae) 125
Jordan, Wayne R., Variation in amounts of epicuticular wax on leaves of Prosopis glandulosa 26

K

Kaldewey, Harald, Distribution and metabolism of IAA in relation to the growth of Helianthus hypocotyls 163

Karrfalt, Eric, The origin and early development of the root-producing meristem of Isoetes andicola L. D. Gomez 372
Kaufman, Peter B., The role of hormone transport and metabolism in apical dominance in oats 293
Khan, M. Ajmal, Seed polymorphism and germination responses to salinity stress in Atriplex triangularis Willd. 487
Kinetin, protocorm formation 210
Kiriluk, Randy M., Effects of auxins on gametophyte development and sexual differentiation in the fern Ceratopteris thalictroides (L.) Brongn. 37
Knutson, Donald M., Phloem in Arceuthobium globosum (Viscaceae) 461
Kreitner, G. L., Stigma development and the stigmatic cuticle of alfalfa, Medicago sativa L. 436
Kyllinga, photosynthesis, growth 151

L

Ladizinsky, G., The biological species of the genus Lens L. 253
Lamprothyrsus, synergids 78
Larrea, growth, precipitation 116
Lateral bud, Avena 293
Leaf: Acacia 351; Cattleya, growth 298; Cordaixylon 275; Cyclanthaceae, anatomy 535; Gleditsia, crystals 474; Helianthus, development 346; Lycopersicon, development 66; Miocene grass 204; orchid 495; Prosopis, epicuticular wax 26; Zea, cell division and elongation 60
Leaf culture, Rhynchostylis 210
Leaf initiation, beet 465
Lee, Thomas D., Effects of seed number per fruit on seed dispersal in Cassia fasciculata (Caesalpiniaceae) 136
Legume, *see* Macroptilium
Lens, distribution, ecology, cytogenetics 253
Lentil, *see* Lens
Light: Alternanthera growth 105; Glycine growth 157
Linnaea, forest ecology 508
Lipase, Ustilago 483
Lippincott, Barbara B., Role of the moss cell wall in gametophore formation induced by Agrobacterium tumefaciens 302
Lippincott, James A., Role of the moss cell wall in gametophore formation induced by Agrobacterium tumefaciens 302
List, Mary L., Photoperiod effects on growth rate of in vitro cultured soybean embryos 157
Lobelia, staminate and pistillate phases 323
Long, James N., A comparison of stand structure and fire history in two black oak woodlands in northwestern Indiana 222
Longstreth, David J., The effect of light on growth and dry matter allocation patterns of Alternanthera philoxeroides (Mart.) Griseb. 105
Lord, E. M., The inflorescence as a metapopulation of flowers: position-dependent differences in function and form in the cleistogamous species Collomia grandiflora Dougl. ex Lindl. (Polemoniaceae) 329
Lord, Elizabeth M., Comparative flower development in the cleistogamous species Viola odorata. III. A histological study 83
Lundquist, Ralph, The propagation of Casuarina species from rooted stem cuttings 378
Lycopersicon, leaf development 66
Lyons, Robert E., A gibberellin-auxin synergism associated with peduncle elongation and senescence in Cyclamen persicum Mill. 'Swan Lake' 170

M

McArthur, E. Durant, The relative influences of mortality, nonflowering, and sex change on the sex ratios of six Atriplex species 385
McNaughton, S. J., Compensatory photosynthetic responses of three African graminoids to different fertilization, watering, and clipping regimes 151
Macroptilium, root nodulation, Rhizobium 444
Maple, *see* Acer
Marattiales, Psaronius 407
Martin, Craig E., Functional stomata of the atmospheric epiphyte Tillandsia usneoides L. 502
Mason, Catherine B., The effect of light on growth and dry matter allocation patterns of Alternanthera philoxeroides (Mart.) Griseb. 105
Mayers, Anna M., Comparative flower development in the cleistogamous species Viola odorata. III. A histological study 83
Mayeux, Herman S., Jr., Variation in amounts of epicuticular wax on leaves of Prosopis glandulosa 26
Medicago, stigma 436
Medullosa, phloem 550
Megagametophytes, grasses 78
Megastrobili, Cycas, Dioon, Zamia 92
Melanopsichium, teliospores 452
Meristem: Brassica, growth 308; Isoetes 372; Solanum 22
Mesquite, *see* Prosopis
Mickle, James E., Aspects of growth and development in the Pennsylvanian age marattialean fern Psaronius 407
Mikesell, Jan, Internal phloem development in Pharbitis nil Chois. (Convolvulaceae) 196
Miocene, grass leaves 204
Mistletoe, *see* Arceuthobium
Mitotic index, Solanum 22
Mohapatra, S. S., Structure of nodules formed by Rhizobium strain ANU289 in the nonlegume Parasponia and the legume siratro (Macroptilium atropurpureum) 444
Mojave Desert: Ambrosia, axis splitting 125; Ambrosia, Larrea growth 116
Monocotyledoneae, systematic anatomy, Cyclanthaceae 535
Morning glory, *see* Pharbitis
Morphactin, Helianthus growth 163
Morphology: Acacia leaf, phyllode 351; forest herbs 508; Ustilago mutations 140
Morphometry, Helianthus leaf 346
Mortality, Atriplex 385
Moss, *see* Polytrichum, Pylaisiella
Muehlbauer, F. J., The biological species of the genus Lens L. 253
Mutation: Lycopersicon, leaf development 66; Ustilago 140, 565

N

NAA, GA_3, Cyclamen peduncle senescence 170
α-Naphthaleneacetic acid, *see* Auxin
Natural populations, Atriplex 385
Nectar, hummingbird-pollinated plants 132
Neoformation, Begonia 55
Neovossia, teliospores 452
Nieb, Brenda, Genetics of Ustilago violacea. XVII. Chromosome transfer as a source of recombinant sporidia recovered from immature infected anthers 145
Niklas, Karl J., Aerodynamics and pollen grain depositional patterns on cycad megastrobili: implications on the reproduction of three cycad genera (Cycas, Dioon, and Zamia) 92
Nitrogen fixation, Macroptilium, Parasponia 444
Nobel, Park S., Water relations of cacti during desiccation: distribution of water in tissues 110
Nodulation: Casuarina 378; Macroptilium, Parasponia roots 444
Norstog, Knut, Aerodynamics and pollen grain depositional patterns on cycad megastrobili: implications on the reproduction of three cycad genera (Cycas, Dioon, and Zamia) 92
Nuclear DNA, Coreopsis 240
Numerical classification 518
Nyman, Leslie Paul, Opening and resupination in buds and flowers of Dendrobium (Orchidaceae) hybrids 215

O

Oak, *see* Quercus
Oat, *see* Avena
Obendorf, Ralph L., Photoperiod effects on growth rate of in vitro cultured soybean embryos 157
Oliva, Allison P.: Effects of orchinol, loroglossol, dehydroorchinol, batatasin III, and 3,4′-dihydroxy-5-methoxydihydrostilbene on orchid seedlings 298; Seed germination of North American orchids. II. Native California and related species of Aplectrum, Cypripedium, and Spiranthes 495
Optimum groups, classification 518
Opuntia, water relations, desiccation 110
Orchid, *see* Aplectrum, Cattleya, Cypripedium, Dendrobium, Phalaenopsis, Rhynchostylis, Spiranthes
Organogenesis, Rhynchostylis 210
Organ removal, Cyclamen 170
Orr, Alan R., Histochemical study of enzyme activity in the shoot apical meristem of Brassica campestris L. during transition to flowering. II. Cytochrome oxidase 308
Osmotic pressure, Carnegiea, Ferocactus, Opuntia 110
Ovule, Glycine, Wandlabrinthe 334

P

Paleobotany, *see* Callistophyton, Cordaixylon, Medullosa, Miocene, Pinus, Psaronius
Palmer, Reid G., Postfertilization Wandlabrinthe formation and function in the central cell of soybean, Glycine max (L.) Merr. (Leguminosae) 334
Parasponia, root nodulation, Rhizobium 444
Paspalum, cytology, hybrids 420
Patel, Kamlesh R., Histochemical examination of shoot initiation in cultured cotyledon explants of radiata pine 312
Patersonia, systematics 524
Patterson, Robert P., Photoperiod effects on growth rate of in vitro cultured soybean embryos 157
Pectin, moss gametophore formation 302
Pectinesterase, moss gametophore formation 302
Pensacola bahiagrass, Paspalum 420
Peroxidase: Helianthus growth 163; Pinus shoot initiation 312
Peters, Eric A., Functional stomata of the atmospheric epiphyte Tillandsia usneoides L. 502
Peterson, Curt M., Ultrastructural aspects of the mature embryo sac of soybean, Glycine max (L.) Merr. 1
Phalaenopsis, pollination, emasculation, auxins 43
Pharbitis, phloem development 196
Phenylmercuric acetate, Tillandsia 502
Philipson, M. N., Haustorial synergids in danthonioid grasses 78
Phloem: Arceuthobium 461; Callistophyton 395; Medullosa 550; Pharbitis 196
Phoenix, cotyledon growth 176
Photoperiod, Glycine 157
Photosynthesis: Acacia 351; Hyparrhenia, Kyllinga, Themeda 151
Phylogeny, Medullosa 550
Phragmites, synergids 78
Phyllode, Acacia 351
Phytoalexins, Cattleya seedling growth 298
Phytochrome, Glycine embryo 157
Pine, *see* Pinus
Pinus: genetic variation 229; Middle Eocene 262; shoot initiation, cultured cotyledon explants 312
Pizzolato, Thompson Demetrio, Vascular system of the fertile floret of Anthoxanthum odoratum L. 358
Plaha, K. K., Propagation of Rhynchostylis retusa Bl. (Orchidaceae) by direct organogenesis from leaf segment cultures 210
Plastochron index: Alternanthera 105; Zea leaf 60
Pollen: Austrobaileya 11; Lobelia 323
Pollen-stigma interaction, Medicago 436
Pollination: Cycas, Dioon, Zamia 92; Dendrobium 215; hummingbirds 132; Medicago 436; Viola 83
Polycambiality, beet 465
Polygalacturonic acid, moss gametophore 302
Polymorphism, Atriplex seed, salinity stress 487
Polyploidy, Paspalum 420
Polytrichum, bud, gametophore 302
Precipitation, Ambrosia, Larrea growth 116
Price, G. D., Structure of nodules formed by Rhizobium strain ANU289 in the nonlegume Parasponia and the legume siratro (Macroptilium atropurpureum) 444
Price, H. James, Nuclear DNA contents of Coreopsis nuecensoides and C. nuecensis (Asteraceae), a progenitor-derivative species pair 240
Primary thickening meristem, Iridaceae 524
Propagation, Rhynchostylis 210
Prosopis: leaves, epicuticular wax 26; seed structure, histochemistry 340
Protease, Ustilago 483
Protein bodies, Prosopis 340
Protocorm: orchid 495; Rhynchostylis 210
Psaronius, growth, development 407
Pteridosperm, *see* Callistophyton, Medullosa
Pylaisiella, bud, gametophore 302
Pyrrhanthera, synergids 78

Q

Quarin, Camilo L., Cytology of intra- and interspecific hybrids between two cytotypes of Paspalum notatum and P. cromyorrhizon 420
Quercus, fire history, Indiana Dunes 222

R

Raper, C. David, Jr., Photoperiod effects on growth rate of in vitro cultured soybean embryos 157
Ratkowsky, D. A., A stopping rule and clustering method of wide applicability 518
Regeneration, Acer vessels 50
Rehfeldt, G. E., Geographic patterns of genetic variation in Pinus monticola 229
Reid, William H., Similarity and apparent convergence in the nectar-sugar composition of some hummingbird-pollinated flowers 132
Reproduction: Cassia 136; Cycas, Dioon, Zamia 92; Glycine 157; Glycine embryo sac 1
Resource allocation, Lobelia 323
Respiration: Acacia 351; Brassica 308
Resupination, Dendrobium 215
Rhizobium, nodulation, Parasponia, Macroptilium 444
Rhizomes: forest herbs 508; Iridaceae 524
Rhynchostylis, leaf culture 210
RNAase, Ustilago 483
Root: beet 465; Cordaixylon 275; forest herbs 508; formation, Begonia, tissue culture 55; orchid 495
Rooted cutting, Casuarina 378
Root-producing meristem, Isoetes 372
Rothwell, Gar W., Cordaixylon dumusum n.sp. (Cordaitales). I. Vegetative structures 275
Rubus, forest ecology 508
Rudall, Paula, Taxonomic and evolutionary implications of rhizome structure and secondary thickening in Iridaceae 524
Ruddat, M., Genetics of Ustilago violacea. XVII. Chromosome transfer as a source of recombinant sporidia recovered from immature infected anthers 145
Rytidosperma, synergids 78

S

Salinity: Atriplex seed, polymorphism and germination 487; Spergularia seed 33

Salt glands, Tamarix, ultrastructure 427
Saltiel, F. S.: Genetics of Ustilago violacea: XVI. Morphological mutations 140; XVIII. Morphology mutations for single selection 565
Salt marsh cord grass, *see* Spartina
Sattler, Rolf, Quantitative distribution of mitotic activity during early corolla development of Solanum dulcamara L. 22
Scanning electron microscopy: Austrobaileya pollen wall 11; Begonia explants 55; Miocene grass leaves 204; Ustilaginales 452
Schlesinger, William H., The comparative importance of overland runoff and mean annual rainfall to shrub communities of the Mojave Desert 116
Schroeder, Allen C., Internal phloem development in Pharbitis nil Chois. (Convolvulaceae) 196
Scogin, Ron, Similarity and apparent convergence in the nectar-sugar composition of some hummingbird-pollinated flowers 132
Secretion, Medicago 436
Seed: Atriplex, polymorphism, germination, salinity 487; Cassia, dispersal pattern 136; Cattleya, germination 298; Clarkia, germination 246; Glycine, growth 157; orchid, germination 495; Prosopis, structure, histochemistry 340
Seed fern, Callistophyton 395
Seedling growth, Cattleya 298
Senescence, Cyclamen peduncle 170
Serengeti Plains, Hyparrhenia, Kyllinga, Themeda 151
Sex allocation, Lobelia 323
Sex expression, Atriplex 385
Sex ratios, Atriplex 385
Shade leaves, Helianthus 346
Shehata, Afaf I., Some observations on the relationship between cell division and cell determination in the epidermis of the developing leaf of corn (Zea mays) 60
Shoot: Brassica, enzyme activity 308; elongation, Pinus 229; initiation, Pinus, cultured cotyledon explants 312
Shrub, *see* Ambrosia, Larrea
Sieglingia, synergids 78
Sieve elements, Arceuthobium 461
Sieve tube, Pharbitis 196
Silander, John A., Jr., The genetic basis of the ecological amplitude of Spartina patens. III. Allozyme variation 569
Siratro, *see* Macroptilium
Smilacina, forest ecology 508
Smith-Huerta, Nancy L., Seed germination in related diploid and allotetraploid Clarkia species 246
Smoot, Edith L.: Secondary phloem anatomy of Callistophyton boyssetii (Renault) Rothwell and histological changes in the outer phloem 395; Phloem anatomy of the Carboniferous pteridosperm Medullosa and evolutionary trends in the gymnosperm phloem 550
Smut, *see* Ustilago
Smut fungi, enzyme survey 483
Soediono, Noes, Opening and resupination in buds and flowers of Dendrobium (Orchidaceae) hybrids 215
Soil moisture, Ambrosia, Larrea growth 116
Solanum, mitotic index, corolla development 22
Sood, Anil, Propagation of Rhynchostylis retusa Bl. (Orchidaceae) by direct organogenesis from leaf segment cultures 210
Sorensen, E. L., Stigma development and the stigmatic cuticle of alfalfa, Medicago sativa L. 436
Soybean, *see* Glycine
Spanish moss, *see* Tillandsia
Spartina, allozyme variation 569
Spergularia, seed dormancy 33
Sphacelotheca, teliospores 452
Spiess, Luretta D., Role of the moss cell wall in gametophore formation induced by Agrobacterium tumefaciens 302
Spiranthes, seed germination 495
Sporidia, Ustilago 145
Steinhoff, R. J., Geographic patterns of genetic variation in Pinus monticola 229
Stem: Cordaixylon 275; Cyclanthaceae, anatomy 535
Stem callus, Casuarina 378
Stem girdling, Acer 50
Stephenson, A. G., Factors that influence the duration of the staminate and pistillate phases of Lobelia cardinalis flowers 323
Stereology: date cotyledon 176; Helianthus leaf 346
Stieber, J., Dynamic and structural relationships among leaves, roots, and storage tissue in the sugar beet 465
Stigma, Medicago 436
Stockey, Ruth A., Middle Eocene Pinus remains from British Columbia 262
Stoessl, Albert, Effects of orchinol, loroglossol, dehydroorchinol, batatasin III, and 3,4'-dihydroxy-5-methoxydihydrostilbene on orchid seedlings 298
Stolons, forest herbs 508
Stomata: Tillandsia 502; Zea, differentiation 60
Stopping rule 518
Storage root, beet 465
Strauss, Michael S., Postpollination phenomena in orchid flowers. XII. Effects of pollination, emasculation, and auxin treatment on flowers of Cattleya Porcia 'Cannizaro' and the rostellum of Phalaenopsis 43
Stylites, Isoetes 372
Succession, Indiana Dunes 222
Succinate dehydrogenase, Pinus shoot initiation 312
Sucrose, hummingbird-pollinated plants 132
Sugar beet, *see* Beet
Sugar: hummingbird-pollinated plants 132; *see* fructose, glucose, sucrose
Sunflower, *see* Helianthus
Synergids, danthonioid grasses 78
Systematics: Cyclanthaceae 535; Iridaceae 524; Lens 253; stopping rule 518

T

Tabebuia, branching system 184
Tamarix, ultrastructure, salt glands 427
Taxonomy, Lens 253
Teliospores: Ustilaginales, intraspecific variation 452; Ustilago 140, 145, 565
Temperature: Clarkia, seed germination 246; Spergularia germination 33
Tetraploids, Clarkia 246
Themeda, photosynthesis, growth 151
Thomasson, J. R., Miocene grass (Gramineae: Arundinoideae) leaves showing external micromorphological and internal anatomical features 204
Thomson, W. W., Ultrastructural differentiation of an unusual structure lining the anticlinal walls of the inner secretory cells in Tamarix salt glands 427
Thorpe, Trevor A., Histochemical examination of shoot initiation in cultured cotyledon explants of radiata pine 312
Tiarella, forest ecology 508
Tillandsia, stomata 502
Tiller bud, Avena 293
Tilletia, teliospores 452
Tilton, Varien R., Postfertilization Wandlabrinthe formation and function in the central cell of soybean, Glycine max (L.) Merr. (Leguminosae) 334
Tissue clearing 465
Tissue culture: Pinus cotyledon 312; thin layer, Begonia 55
Tomato, *see* Lycopersicon
Tomlinson, P. B., Systematic anatomy of Cyclanthaceae (Monocotyledoneae)—an overview 535
Torrey, John G., The propagation of Casuarina species from rooted stem cuttings 378
Torsion, Dendrobium 215
Tran Thanh Van, Marie, Histological changes in epidermal and subepidermal cell layers of Begonia rex induced to form de novo unicellular hairs, buds, and roots 55
Translocation: Arceuthobium 461; Helianthus leaf 346

Transmission electron microscopy, Austrobaileya pollen wall 11
Transpiration: Acacia 351; Helianthus leaf 346
Tree development, Tabebuia 184

U

Ultrastructure: Austrobaileya pollen wall 11; Glycine embryo sac 1; Tamarix salt glands 427
Ungar, Irwin A.: Alleviation of seed dormancy in Spergularia marina 33; Seed polymorphism and germination responses to salinity stress in Atriplex triangularis Willd. 487
Ustilaginales, teliospores, intraspecific variation 452
Ustilago: enzyme survey 483; morphology mutations 140, 565; recombinant sporidia 145; teliospores, intraspecific variation 452

V

Valeriana, forest ecology 508
Vascular tissue: Pharbitis 196; Psaronius 407
Vasculature: Anthoxanthum floret 358; beet 465; Cordaixylon 275; Iridaceae 524
Vegetative spread, forest herbs 508
Vegetative structure, Cordaixylon 275
Vij, S. P., Propagation of Rhynchostylis retusa Bl. (Orchidaceae) by direct organogenesis from leaf segment cultures 210
Viola, flower development 83

W

Wallace, L. L., Compensatory photosynthetic responses of three African graminoids to different fertilization, watering, and clipping regimes 151
Walters, Gerald A., Acacia koa leaves and phyllodes: gas exchange, morphological, anatomical, and biochemical characteristics 351
Wandlabrinthe, Glycine 334
Warner, Susan, Cordaixylon dumusum n.sp. (Cordaitales). I. Vegetative structures 275
Water movement, Ambrosia 125
Water potential, Clarkia, seed germination 246
Water relations, Carnegiea, Ferocactus, Opuntia 110
Wax, Prosopis leaf 26
Widmer, Richard E., A gibberellin-auxin synergism associated with peduncle elongation and senescence in Cyclamen persicum Mill. 'Swan Lake' 170
Wilcox, Lee W., Postfertilization Wandlabrinthe formation and function in the central cell of soybean, Glycine max (L.) Merr. (Leguminosae) 334
Wilder, G. J., Systematic anatomy of Cyclanthaceae (Monocotyledoneae)—an overview 535

X

Xylem discontinuity, Anthoxanthum floret 358
Xylem pressure potential, Ambrosia 125

Z

Zamia, aerodynamics, pollination 92
Zavada, Michael S., Pollen wall development of Austrobaileya maculata 11
Zea, leaf, cell division and elongation 60
Zimmermann, M. H., Length, width, and pattern of regenerative vessels along strips of vascular tissue 50
Zobel, Donald B., Ecological implications of belowground morphology of nine coniferous forest herbs 508
Zymograms, Spartina 569